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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,323	01/04/2001	Toshikazu Ura	F-6768	7228

7590 03/26/2004

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122 East 42nd Street
New York, NY 10168

EXAMINER	
TSANG FOSTER, SUSY N	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/719,323	URA, TOSHIKAZU	
	Examiner	Art Unit	
	Susy N Tsang-Foster	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-33* is/are pending in the application.

4a) Of the above claim(s) *24-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-19* is/are rejected.

7)☒ Claim(s) *20-23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed on 12/24/2003. Claims 1-16 have been cancelled and claims 17-33 have been added.

2. Newly submitted claims 24-33 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 17-23, drawn to a rechargeable battery and its corresponding method of making a battery using a molding jig (corresponds to embodiment of Figure 2).

Group II, claim(s) 24-33, drawn to a method of making a rechargeable battery by pressing a current collector having a plurality of ribs such that the ribs bite into the uncoated projected portions of one of the positive and negative electrodes (corresponds to embodiment of Figure 4).

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special

technical features for the following reasons: The method of Group II does not make the battery of Group I. Furthermore, the battery features that the method of Group I and the method of Group II share are known in the art as evidenced by Jean-Pierre Cailley (US Pat. No. 3,761,314) and Tsuda et al. (US Pat. No. 4,332,867) both of which disclose a battery comprising an electrode plate group including a positive electrode plate in which a positive electrode material is attached to a positive current collector, a negative electrode plate in which a negative electrode material is attached to a negative current collector, the positive and negative electrode plates being superimposed with an intervening separator being disposed therebetween; the positive electrode plate, the negative electrode plate, projected portions of the positive and negative current collectors respectively extending outwardly of opposite ends of the electrode plate group.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 24-33 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03. In contrast to applicant's assertions on page 17 of the amendment filed on 12/24/2003, newly added claims 24-33 do not correspond to cancelled claims 12 and 13 which were indicated to be allowable in the previous office action since cancelled claims 12 and 13 depended from cancelled claim 10 that is drawn to a method of manufacturing a rechargeable battery comprising the step of inserting the electrode plate group into a cylindrical molding jig. Furthermore, cancelled claims 12 and 13 did not recite the step of pressing a current collector current collector having a plurality of ribs such that the ribs bite into the uncoated projected portions of one of the positive and negative electrodes

which corresponds to embodiment of Figure 4 that is different from the embodiment of Figure 2 comprising the step of inserting the electrode plate group into a molding jig.

3. Claims 17-33 have been added and are pending. Claims 24-33 are withdrawn as being drawn to a non-elected invention. Claims 20-23 are objected to. Claims 17-19 are finally rejected for reasons given below.

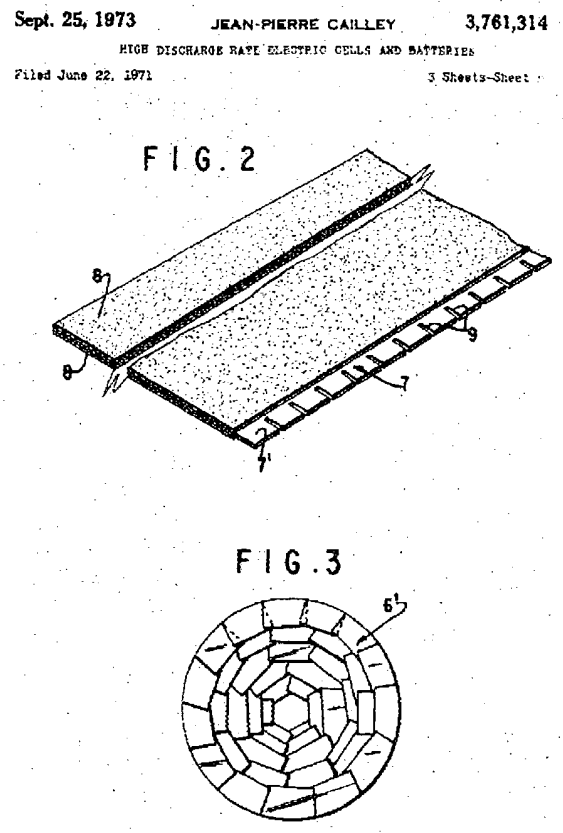
Claim Rejections - 35 USC § 112

4. Claims 17 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 17, the limitation "an entirety of each of the projected portions is bent progressively radially inward to form a contiguous flattened spiral region on each of the opposite ends of the electrode plate group which approximates a flat plane extending orthogonally to the spiral axis" is not in the original disclosure. The original disclosure does not show a contiguous flattened spiral region which approximates a flat plane extending orthogonally to the spiral axis because there is no top view or bottom view of the electrode plate group in the Figures or any mention in the specification that a top edge of either the first current collector or the second current collector forms a contiguous flattened spiral region which approximates a flat plane

extending orthogonally to the spiral axis. The method depicted in Figure 2 does not ensure a top edge of the first current collector that forms a contiguous flattened spiral region that approximates a flat plane extending orthogonally to the spiral axis.

As admitted by the applicant on page 15, lines 1-5 of the specification, folding may occur to some extent using the method depicted in Figure 2. Since there is no mention of slits being made at the edge of the current collector, the folding of the edge of the current collector into a plane will not result in a contiguous flattened spiral region with approximately a flat plane extending orthogonally to the spiral axis. Furthermore, folding of the edge onto itself may result in a discontinuous flattened spiral region. The edge of the current collector must be slit in order to form a contiguous flattened spiral edge with an approximately flat plane as disclosed by Jean-Pierre Cailley in Figures 2 and 3 and reproduced below (US 3,761,314).



Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by the JPO Machine translation for JP 10-021953 A.

The IPDL JPO Machine Translation for JP 10-021953 A discloses a rechargeable (secondary) battery, comprising:

an electrolyte;

an electrode plate group including a positive electrode plate in which a positive electrode material is attached to a positive current collector, a negative electrode plate in which a negative electrode material is attached to a negative current collector, the positive and negative electrode plates being superimposed with an intervening separator being disposed therebetween, the positive electrode plate, the negative electrode plate and the separator together being of curved shape following a spiral, projected portions of the positive and negative current collectors respectively extending outwardly of opposite ends of the electrode plate group, said projected portions being configured to respectfully define flat planes on the opposite ends of the electrode plate group (See Figures 2 and 3 and paragraphs 9, 18-26, 37, and 38 of the JPO Machine Translation for the reference).

As seen in Figures 2 and 3, the approximate flat planes being formed by deforming the projected portions which are initially coplanar with remaining portions of the current collectors by application of pressure by a pressing a top current collector assembly (the pressing member)through an opening in a battery casing at one end thereof (the molding jig) of a generally cylindrical interior configuration in a direction of a spiral axis of the electrode plate group. As a result of this process, the projected portions have a contiguous structure along an extent of the spiral such that when pressure is applied by the pressing the

current collector assembly downward along the axis of the spiral (the pressing member), an entirety of each of the projected portions is bent progressively radially inward to form a contiguous flattened spiral region on each of the opposite ends of the electrode plate group which approximates a flat plane extending orthogonally to the spiral axis. As seen in Figures 2 and 3, a positive current collecting plate and a negative collecting plate are each joined to the flattened spiral region at a one of the opposite ends corresponding to the projected portion of a respective one of the positive and negative electrode plates. Furthermore as asserted by applicant on page 14 of the amendment filed 12/24/2003, since the electrode plate groups of JP 10-021953 A are wound in a spiral fashion, the projected portions of the JP 10-021953 A reference should not bend radially outwards.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda et al. (US 4,332,867) in view of Jean-Pierre Cailley (US 3,761,314).

The product-by-process limitations of claims 17 and 18 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art

product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

Tsuda et al. disclose a nickel-cadmium cell (which is inherently rechargeable) comprising (col. 1, lines 1-9) an electrode plate group which comprises a first current collector (positive plate) and a first electrode material adjacent the first current collector; a second current collector (negative plate), and a second electrode material adjacent the second current collector; an intervening separator for separating the first current collector and the first electrode material from the second current collector and the second electrode material; an electrolyte; a battery container for accommodating the electrode plate group and the electrolyte (col. 1, lines 1-9; col. 3, line 6 to col. 4, line 64 and Figures 1-5).

The separator is disposed between the positive and negative current collectors to form a spiral wound assembly and the positive and negative current collectors are offset from each other and also from the separator to leave respective edge portions of the positive and negative current collectors and one on each end of the spiral (coil) assembly and edge portions of the respective positive and negative current collectors are kept free of active material (col. 1, lines 49-60). Positive and negative collector plates are welded to the respective edge portions of the positive and negative current collectors (col. 4, lines 61-64). The positive and negative collector plates are welded in the radial direction at a plurality of locations in the circumferential direction with respect to the plane of the ends of the spiral assembly (see Figures 2-4 and col. 5, lines 3-46). Tsuda et al. also disclose that the current collectors may be corrugated (ribs), ruffled or embossed (col. 8, lines 20-26).

Tsuda et al. do not disclose that edge portions of the positive current collector and the negative current collector are bent to form an approximate flat plane at both ends of the electrode plate group, and that a top edge portion of the first current collector is bent orthogonally with respect to the axis of the spiral to form a contiguous flattened spiral region.

Jean-Pierre Cailley teaches slitting and bending edge portions of the positive current collector and negative current collector that are free of active material at a 90° angle to form respective contiguous spiral edge flat plane bent orthogonally with respect to the spiral at both ends of the electrode plate group that are welded to first and second collector plates and effective contact results between the collector plates and the respective flat plane of the current collector due to the reliable welds that can be made between two relatively large contacting areas capable of bearing high pressures during welding (see Figures 2 and 3; col. 1, lines 13-34; col. 2, lines 7-15 and lines 32-45; col. 3, lines 5-37 and lines 65-75; col. 4, lines 15-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to slit and bend edge portions of the positive current collector and negative current collector at a 90° angle to form respective contiguous spiral edge flat plane with respect to the axis of the spiral at both ends of the electrode plate group that are welded to first and second collector plates because effective contact results between the collector plate and the corresponding flat plane of the current collector due to the reliable welds that can be made between two relatively large contacting areas capable of bearing high pressures during welding.

Response to Arguments

9. Applicant's arguments filed 12/24/2003 have been fully considered but they are not persuasive.

Applicant asserts that the instant disclosure adequately describes the provision of a flattened spiral comprised of contiguous material free of slits since one of ordinary skill in the art would readily realize that the method described in the invention will only work if the projected portions, which are to be entirely bend radially inward, are an unbroken, contiguous sheet structure.

In response, the Examiner is not convinced by this argument since only the outer most projected portions of the electrode plate group having slits would bend radially inward when the electrode plate group having the projected portions at opposite ends thereof are confined in a cylindrical molding jig. Furthermore, there is no guarantee that all the projected portions whether slit or unslit that are not located near the inner walls of the molding jig shown in Figure 2 of the present application would bend radially inward because the projected portions have equal possibilities of bending inward and/or outward bending since the projected portions are not initially biased in a given direction prior to pressing down with the pressing member in the molding jig shown in Figure 2. When the projected portions located away from the wall of the molding jig bend inwards and outwards, folds would be created in the flattened spiral region as admitted by the applicant on page 15, lines 1-5 of the specification, that folding may occur to some extent using the method depicted in Figure 2.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., contiguous material free of slits) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant asserts that if a structure with slits similar to Cailley were to be used, one could not be certain whether the tab-like projections would bend radially inwards or outwards, since there would be no tension created in the material in a circumferential direction that would operate to prevent the bending of the projected portions in a direction opposite to the concavity of the curvature, i.e., in a radially outward direction.

In response, Cailley was applied to claim 17 which recited the limitation of the molding jig as a product-by-process limitation which is not given patentable weight in a product claims. Furthermore, if the slitted projections are inserted into a molding jig, the projected portions would bend in the same manner as unslitted projections if both slitted and unslitted projections are not initially biased in a given direction. Furthermore,it would be more facile to bend the slitted portions inwardly than the unslitted projections in a molding jig because the continuous projections are subject to buckling which would be absent for the slitted portion. As shown in Figures 2 and 3 of Cailley et al., the slitted portions are easily bent inwards to form a contiguous structure along an extent of a spiral. The definitions of the word "contiguous" are 1) being in actual contact: touching along a boundary or at a point, 2) adjacent, 3) next or near in time or sequence, 4) touching or connected throughout in an unbroken sequence" (see Merriam

Webster's Collegiate Dictionary, Tenth Edition, 1997, Merriam-Webster, Incorporated, Springfield, page 250). The projected portions of Cailley et al. clearly satisfy at least one of the four definitions for "contiguous".

Allowable Subject Matter

10. Claims 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art of record, JP 10-021953 A., does not disclose, teach, or suggest the distinguishing feature of:

removing said electrode plate group from the molding jig;

pressing a positive electrode current collecting plate and a negative electrode current collecting plate into contact with the flattened regions on respective ones of the opposite ends of the electrode plate group corresponding to the positions of the uncoated projected portions of the positive electrode plate and the negative electrode plate; and

welding the current collecting plates to the electrode plate group at a plurality of locations within the flattened regions.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/ Susy Tsang-Foster

Susy Tsang-Foster
Primary Examiner
Art Unit 1745